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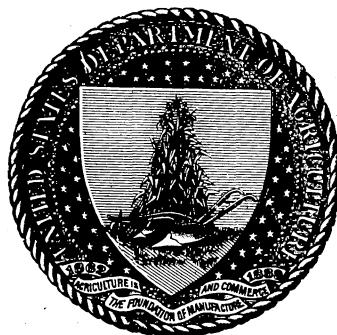
FARMERS' BULLETIN No. 200.

TURKEYS:

STANDARD VARIETIES AND MANAGEMENT.

BY

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U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., May 10, 1904.

SIR: I have the honor to transmit herewith a paper on Turkeys: Standard Varieties and Management, prepared by Mr. T. F. McGrew, of New York City, a well-known judge of poultry and a writer on questions relating to the breeds and breeding of poultry.

In view of the increasing popular interest in the production of turkeys for market and the advantages of improving the stock of turkeys, I recommend that this be published as No. 200 in the Farmers' Bulletin series.

Respectfully,

D. E. SALMON, *Chief.*

Hon. JAMES WILSON,
Secretary of Agriculture.

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~~GENERAL INVESTIGATIONS.~~

TURKEYS: STANDARD VARIETIES AND MANAGEMENT.

HISTORICAL INTRODUCTION.

No other kind of domestic poultry has come into such general use throughout the entire world for Thanksgiving and holiday feasts as has the turkey. Records show that in England, in 1541, it was enumerated among the dainties, while in 1573 it had become the customary fare of the farmer.

ORIGIN OF THE DOMESTIC TURKEY.

W. B. Tegetmeier, F. Z. S., in the poultry book issued in London (1867), says of the domestic turkey:

Every author who has written on the subject, since the days of Linnaeus, has considered it to be derived from the well-known wild turkey of North America; but on account of the great differences which are met with among our domestic turkeys, and the strains of the wild turkeys recently imported from North America not readily associating or pairing with them, I have for years past entertained a contrary opinion.

This writer is probably in error regarding the failure of the wild turkeys of North America to pair with the domestic turkeys, as Audubon has recorded the coming of wild turkeys into the barnyard, where they paired with his domestic turkeys. It is also well known that the American Bronze turkey originated from the union of the wild turkey of North America with the domestic turkey of this country.

Mr. Tegetmeier quotes from the writings of Prof. Spencer Baird and others to show that the early scientific authorities on ornithological subjects believed that there existed at one time a distinct variety, the original of our domestic turkey; that this was indigenous to the West India Islands, and was transferred as tamed to Mexico; that it was taken thence to Europe in 1520; and that ultimately the wild original was exterminated by the natives. Whether or not this view is correct will probably never be satisfactorily settled. It is the generally accepted view at the present time that all the turkeys of the world have descended in some way or other from the three forms known as the North American, the Mexican, and the Honduras, or Ocellated, turkey.

RECOGNIZED WILD FORMS.

North American wild turkey.—This is the original species of the Eastern United States, known as *Meleagris americana*, whose colors are black, beautifully shaded with a rich bronze, the breast plumage being dark bronze, illuminated with a lustrous finish of coppery gold. This finish of bronze and gold emblazons the entire plumage throughout as if burnished into brightness. In the rays of the sun it shows a most beautiful combination of bronze, black, copper, and gold.

Mexican turkey.—The wild turkey of the southern, or Mexican, country, called by some naturalists *Meleagris mexicana*, is somewhat

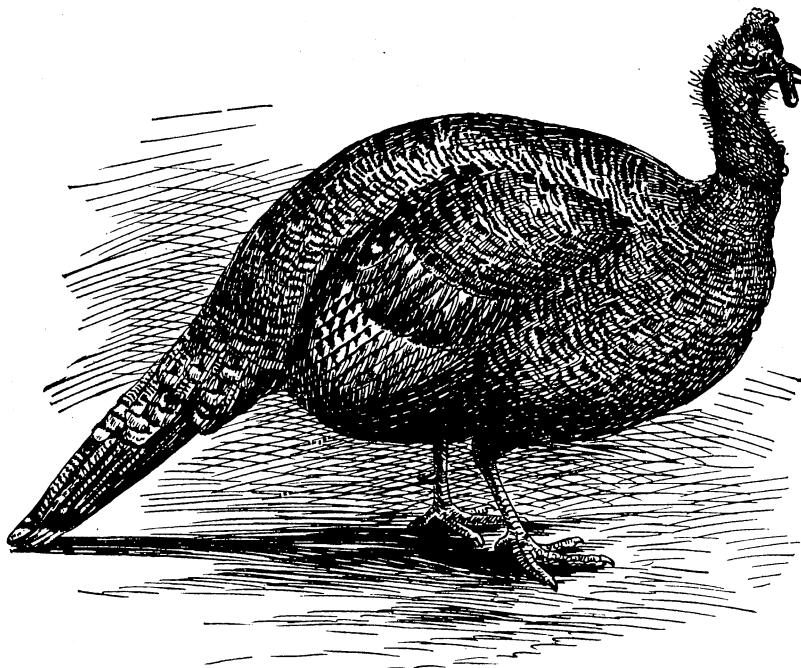


FIG. 1.—The Ocellated, or Honduras, turkey.

shorter in shank than the northern species, in body color metallic-black shaded with bronze, its tail and other feathers being tipped with white. This appears to be the species that was first taken to Spain and other European countries. It is also thought that the white markings of the plumage of this fowl show its influence on the variety of domestic turkeys known as the Narragansett.

Ocellated turkey.—The wild species known as the Honduras turkey—scientifically as *Meleagris ocellata* (fig. 1)—was originally a native of Honduras and other parts of Central America. Some describe it as most beautiful in coloring, equal to the Impeyan pheasant, if not richer. The head and neck of this wild variety are naked and no

breast tuft is present. The caruncles of the head and neck differ somewhat from those of other turkeys. The ground color of the plumage is described as of a beautiful bronze-green, banded with gold-bronze, blue, and red, with some bands of brilliant black. It is to be deplored that this variety can not be bred successfully as a domestic fowl in the northern climate. The writer can not learn that it has ever been successfully bred outside of its native heath.

Crested turkeys.—While not a recognized variety, there are seen at times turkeys with crests, or topknots. This seems to be rather a freak than a natural appendage. In the crested fowls, known as the Polish family among chickens, there is an unusual skull formation which naturally belongs to this breed. But with the turkeys (and ducks as well) the crest seems to be an unnatural growth. There are but few of these to be seen at the present time.

DOMESTICATION.

There is apparently no contention regarding the original transportation of the turkeys from America to Spain between the years 1518 and 1526. It also seems to be admitted that they were introduced into England in 1524. Among the earliest recorded varieties of domestic turkeys we find the Black Norfolk and the large Cambridge turkey. Undoubtedly the turkey had been domesticated in this country prior to the recording of these varieties in England.

PRESENT CONDITION OF THE INDUSTRY.

Recent improvement.—The growing of turkeys seems to have improved within the last few years as a result of a determined effort on the part of producers of what is termed standard-bred, or exhibition, stock to demonstrate that it is more profitable to use purebred breeding stock than the smaller and less vigorous stock of days gone by. Their efforts to introduce throughout the country the several standard varieties of turkeys has greatly benefited the turkey-growing industry of this country. This effort has supplied rich, new, vigorous blood throughout the whole country, adding strength and vigor to innumerable flocks, and thereby, to some extent, building up the stock that had become deteriorated through the carelessness and inattention of the producers themselves.

Deterioration through inbreeding.—The fact that one fecundation is sufficient to render fertile all the eggs of one laying has made possible the undermining of the health and vigor of the present-day domestic turkey. Being advised of this, hundreds of people depend upon their neighbors' flocks for the services of a male and pay no attention to the matter of breeding stock except to keep one or two turkey hens. This has reduced many of the turkeys throughout the country almost

to a condition of imbecility. The lack of vigor in a large portion of the breeding stock throughout the country has jeopardized to a certain extent the production of a sufficient number of market turkeys to supply the demand. In fact, not fully realizing that their failure was largely due to undermining the vitality of their breeding stock through inbreeding, people have become so disheartened in some localities with the meager results of their efforts to grow turkeys for market that they have desisted from the attempt.

Throughout the country the attention of turkey growers has been called to the successful production of market turkeys in the State of Rhode Island. Unquestionably some of the best market turkeys produced in the world have been sent out of Rhode Island. But even there the art was in danger of being lost through careless handling of breeding stock. If those most interested in the turkey crop of that State had not put forth an unusual effort to introduce plenty of new vigorous stock, they would not have been in a much better state at the present time than growers in many other localities.

There never has been a more active demand for market turkeys than during the past ten years, and there is no reason why this should not increase very materially in the next few years as a result of the growth of population.

STATISTICS OF PRICES AND PRODUCTION.

Recent prices.—The market statistics show that there has been an active demand for turkeys for many years past. The records of the winter of 1903–04 perhaps show the highest prices that have ever been paid for the turkey crop, which seems to have been considerably less in proportion to the demand than for several years past. The wholesale prices paid in the Western States ranged from 10 to 15 cents a pound, dressed, with the head, feet, and entrails. The average wholesale price as recorded in New York for the past ten years has ranged from 8 to 20 cents a pound. Boston shows a valuation higher than this in a few instances only, and the Chicago market has recorded from 6 to 18 cents. In considering these figures one must always remember that the best quality of stock can always be sold at good paying prices, while for poor, ill-favored stock one must accept whatever price can be got.

Census of 1900.—The census of 1900 shows that, with a little over 5,000,000 farms in the United States, not much over 6,500,000 turkeys were produced. Among the States, Texas is in the lead, having produced almost 650,000 turkeys. Following Texas come Missouri, Illinois, Iowa, Ohio, and Indiana, in the order named. The State of Rhode Island produced less than 5,000 turkeys. It may be remarked, however, that if all the turkeys were of such good quality

as those produced in Rhode Island, their value would be nearly doubled and they would return correspondingly greater profits to the growers. It is quite as easy to grow turkeys of superior quality as it is to grow those of inferior quality. Rhode Island turkeys sold at retail in the markets of New York City and Boston during Thanksgiving and holiday weeks of the past winter for as high as 38 and 40 cents a pound, while other turkeys could be bought at 20 to 25 cents. This gives some idea of the willingness of people to pay a good price for the best.

PROFITS OF TURKEY GROWING.

Cost of production and chance for profits.—It is claimed that, in the West and the Southwest under ordinarily good conditions, turkeys can be grown and sold at 8 to 8½ cents a pound, live weight, and return a profit to the growers. When the possibility of an advance of 3 or 4 cents per pound is considered it will readily be seen that there is a chance for good profits. In addition to this there is an opportunity for smaller growers who live near towns and villages to dress and sell their turkeys to private customers at the local retail prices. All admit that, if it were not for the unnatural losses that have been sustained in the past few years, much more profit could be made from growing turkeys. These losses are largely chargeable to conditions that may be removed by following the laws of nature in selecting and pairing the breeding stock.

Turkeys compared with other live stock.—There is no other kind of live stock that will return so large a profit to the successful producer as will poultry, and no kind of poultry is more profitable than turkeys when properly handled. The fact that turkeys will, from the time they are six weeks old until winter sets in, gain the greater part of their entire living from bugs, grasshoppers, and waste grain that they pick up in their wanderings over the range, assures their existence through this period at little or no cost to the grower. In other words, they may be termed self-sustaining foragers where they have sufficient range.

Increased demand for turkeys.—The chance for profit in the production of turkeys is gradually improving as a result of a more general use of the flesh. They are now used not only for roasting, but to an increasing extent as cold cuts for sandwiches and for salads, and large numbers of poult are used for broilers. Late-hatched poult do well for this purpose, and, while there can not be much opportunity for growing poult to maturity when they are hatched late in the season, they may be sold for broilers at a good profit. No dish is more valued in our large cities at the present time than the broiled poult.

Preferred weights for market.—Turkeys that are hatched early in the spring should grow to weigh from 14 to 20 pounds by Thanksgiving

week. These weights are often exceeded by the best growers, but as they are the most popular and most readily produced, they are suggested as the most advisable. The average yield of turkey hens is from 18 to 30 eggs, each of which can usually be counted on to produce a living poult. The question of profit from keeping turkeys simply resolves itself into the ability of the grower to bring them to a marketable size. This can readily be done if care and attention be given to all the requirements for success.

THE STANDARD VARIETIES OF DOMESTIC TURKEYS.

The Spaniards have the credit of taking the turkey from Mexico to Europe. Mr. Dixon says that they first reached England in 1525. From the Mexican variety the turkeys of England were bred, and what is known in England as the Norfolk variety we call the Black turkey. Quite likely this variety came from England to us, and was used as the foundation for the cross with our wild turkeys to establish or create the Bronze turkey. Audubon says that to his own knowledge the wild turkeys would come from their haunts and feed and breed with the domestic or tame turkeys, and the half-bred birds were finer in size and hardier in constitution than the domestic stock. To this day we strengthen the blood line of our Bronze turkey by making a cross with the wild turkey. The influence of the light markings of the Mexican turkey is shown in the plumage of some of our domestic varieties.

Six standard varieties.—Six standard varieties of turkeys are more or less grown in this country, viz: Bronze, Narragansett, Buff, Slate, White, and Black. The main differences are in size and color of plumage. The Bronze and the Narragansett are the largest, the Buff and Slate are the medium, and the Black and White the smallest. Of late so much improvement in size has been made in the Whites that they have moved up to contend for third position, some of them having passed the 30-pound mark. The same statement may soon be made of the Blacks, as they have greatly improved during the last few years.

In addition to the foregoing there is a nonstandard variety known as the Bourbon Reds. They might well claim the position now held by the Buff turkeys, being quite like them and more largely grown for market than are the Buffs. There is scarcely enough preference shown in the open market for any one of these varieties for table use to cause it to be favored in production of turkeys for market. There is, however, a strong preference at all times for the best grown and best finished specimens of all varieties. In Rhode Island, where the highest quality is produced, there does not seem to be much preference for any particular variety.

Origin of varieties.—Our domestic turkeys have all been bred from the wild turkey of the United States and Canada and the wild turkey of Mexico. Climatic conditions have prevented the Honduras, or Ocellated, turkey from playing any considerable part in bringing the domestic turkey to its present state of development. The wild turkey of North America has for the most part been used as the foundation from which size and vigor in our domestic stock have been gained. The lighter shades of color found in the Mexican turkey may have lent their aid in the markings of the Narragansett. As to the origin of the White variety, nothing that may be classed as authentic is recorded. The Blacks may have come from either of the wild varieties as sports, and the same may be said of the Whites. We know that white individuals have come as sports from both the Bronze and the Narragansett varieties. Such sports do not have the pink shank that is demanded in true-bred Hollands, but, when crossed with them, may be brought within color demands through selection.

THE BRONZE TURKEY.

Origin and size.—This variety (figs. 2 and 3) holds the post of honor. As already stated, it probably originated from a cross between the wild and the tame turkey. Its beautiful rich plumage and its size have come from its wild progenitor. To maintain these desirable qualities, crosses are continually made. In this way the mammoth size has been gained. Their standard weight ranges from 16 to 36 pounds, according to age and sex. Probably more of this variety are grown each year than of all others. They have been pushed on all sides almost to the exclusion of the others until within a year or two. If possible the Bronze turkey has been developed too much in the direction of size. While size, within reasonable limits, is to be desired and encouraged, when it is confined to length of thigh and shank, it is a gain of weight with but little additional value.

Coloring.—The coloring of this variety is a ground of black blazoned or shaded with bronze. This shading is rich and glowing, and, when the sun's rays are reflected from these colors, they shine like polished steel. The female is not as rich in color as the male, but both have the same color and shadings. Much of this richness of color is lost through inbreeding, as it is improved by each cross with the wild specimens. Of all our domestic fowls none suffer from inbreeding so much as turkeys. This should be guarded against at all times, if it is hoped to gain the best results.

Selection of breeding stock.—Naturally the Bronze turkey should be the largest in size, the most vigorous in constitution, and the most profitable to grow. This would be the status of the variety at present were it not that too little attention has been given to the selection of

the females for breeding stock. It should be fully understood that size and constitutional vigor come largely through the female, and, to have this influence to the fullest extent, well-proportioned, vigorous females in their second or third year should be selected as breeders. Do not select the very large specimens for this purpose; those of a medium size are usually the best. Discard the undersized females at all times, as they are of but little value as producers. Length of shank

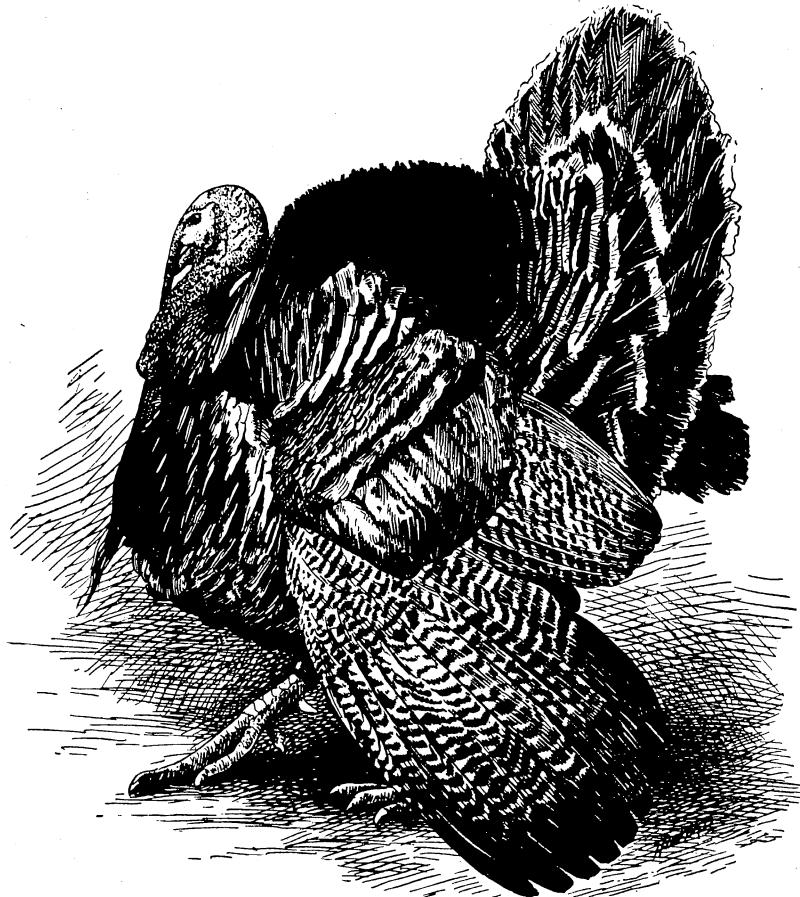


FIG. 2.—Adult Bronze turkey (male).

and thigh, if out of proportion, should not be mistaken for size; full-rounded body and breast indicate value most clearly; size and strength of bone indicate constitutional vigor, which should be maintained through the selection of the very best at all times for producing stock. When special care is given to the selection of the breeding stock, and the grower bears in mind those profitable market characteristics—compactness of form, length of breast and body, and constitutional

vigor—the most satisfactory results may come from the growing of this variety. But no matter how much care may be given these conditions, only partial success will come if inbreeding is permitted. The use of oversized males with small females is of less advantage than the use of smaller males with well-matured, medium-sized females.^a

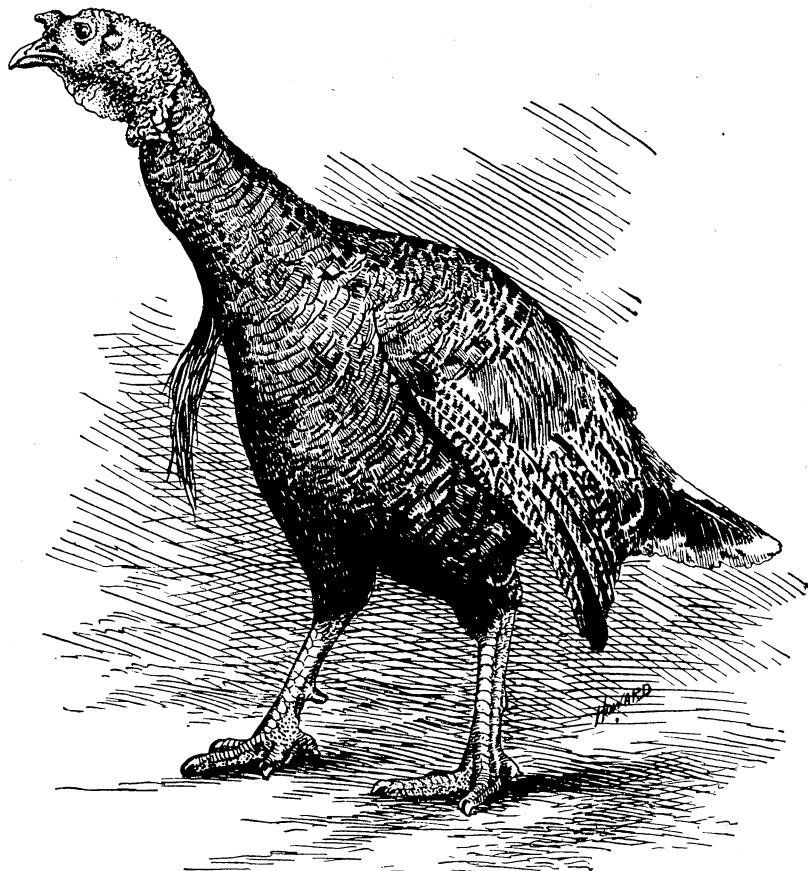


FIG. 3.—Young Bronze turkey (male).

THE NARRAGANSETT TURKEY.

Coloring.—The turkeys of this variety (fig. 4) are next in size to the Bronze. They are of black ground color, each feather ending with a band of steel gray, edged with black. This imparts a grayish cast to the entire surface plumage. Mixed with this is the finish of metallic

^aOften the overlarge male will so lacerate the skin and flesh of the female as to necessitate the stitching up of wounds to save the hen turkey. This danger may be largely removed by trimming or filing off the sharp toe nails of the male just prior to their mating in the spring.

black and bronze luster. They are beautiful in form and feather and breed true to shape and color. The female has a lighter shade of gray in her markings than the male. Her entire color throughout is of lighter shading.

Size.—The standard weights of this variety are, for males, from 20 to 30 pounds, according to age; for females, 12 to 18 pounds. Some old

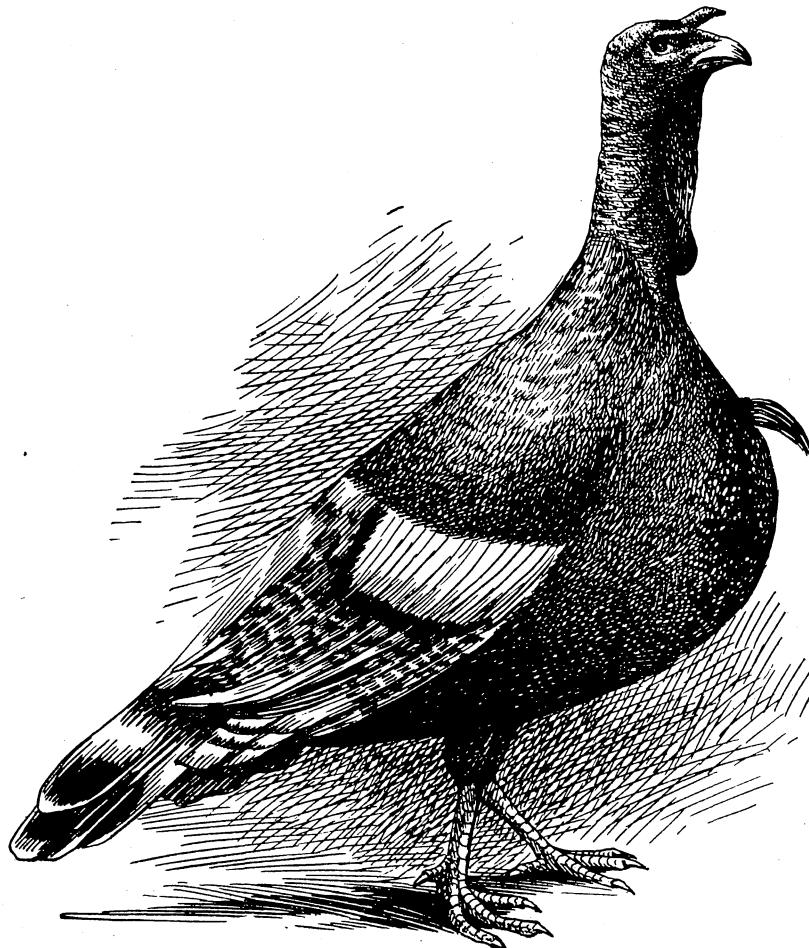


FIG. 4.—The Narragansett turkey (male).

males of both this and the Bronze variety weigh over 40 pounds. These weights are excessive and of but little advantage in breeding; medium-sized males and females are more valuable for producing stock. None of the several varieties of turkeys is more desirable than this for all purposes, and it should be more generally cultivated throughout the country for market. Turkeys of this variety are fine in form of breast and body, not so long in the leg as the Bronze, and of a rather more con-

tented nature. They do not average so large in size as the Bronze, but where grown they are highly valued. Some declare that the Narragansetts will reach market size and condition in less time than the Bronze turkeys, but the writer has not been able to ascertain the truth of this statement.

THE BUFF TURKEY.

This variety (fig. 5) is not generally grown throughout the country. In many localities it is almost unknown. The standard calls for a pure

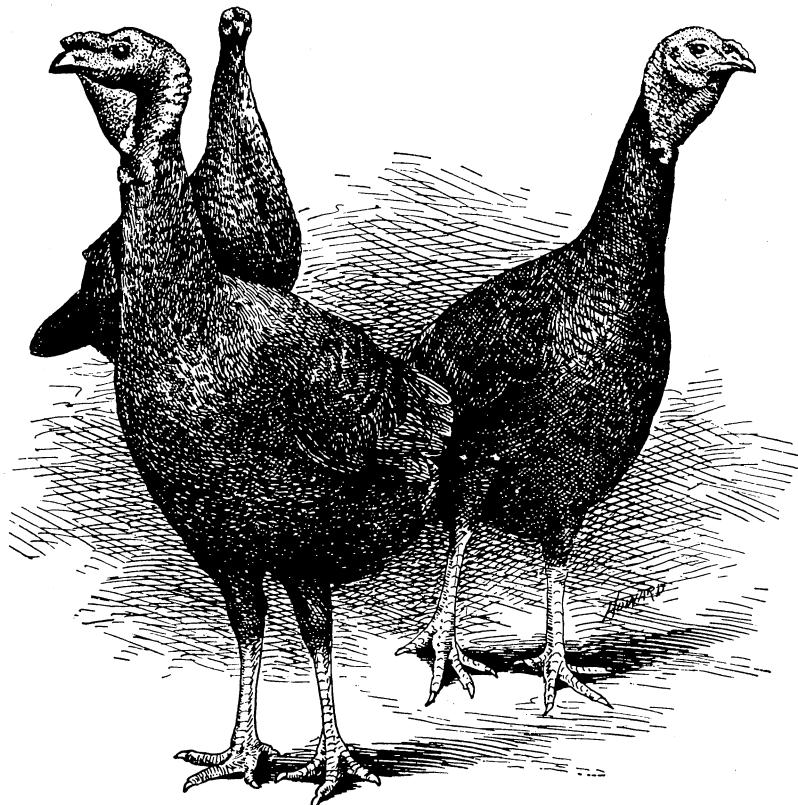


FIG. 5.—Buff turkey hens.

buff color throughout, but this shade of coloring is seldom seen. As bred for market, these turkeys are of a reddish buff or light chestnut color mixed with white and some dark shadings. They are highly valued in some localities for their quick growth and for their attractiveness when dressed. Their average weight is several pounds less than that of the Narragansett. They show evidence of having been crossed with other varieties, perhaps to increase size. Some who raise this variety have paid special attention to its individuality and have maintained the true type and color, adding greatly to its beauty of appearance.

Some of the Rhode Island growers are paying attention to this variety of late, in order to determine its value as compared with others.

The Bourbon Red turkey.—Akin to the Buff, in color at least, is the Bourbon Red. This variety has been known by the names Bourbon Red, Bourbon Butternut, and Kentucky Red. It is claimed by some that it was originally a wild form found in southern Iowa, Missouri, and northern Arkansas. It is not yet recognized by breeders as a standard variety. In color it is dark or brownish red, with white in wings and tail, tips of feather bluish bronze, undercolor almost white, in some cases buff; in average weight almost equal to the Bronze variety. It is claimed that it excels others in richness of color of flesh and skin, also in fullness of breast. This is not true to any marked degree. It is a strong, vigorous variety, worthy of consideration with others, but does not have any unusual features of excellence.

THE SLATE TURKEY.

The Slate turkey (fig. 6) might be called a Blue turkey. These turkeys about average in size with the Buffs and Blacks as we gener-

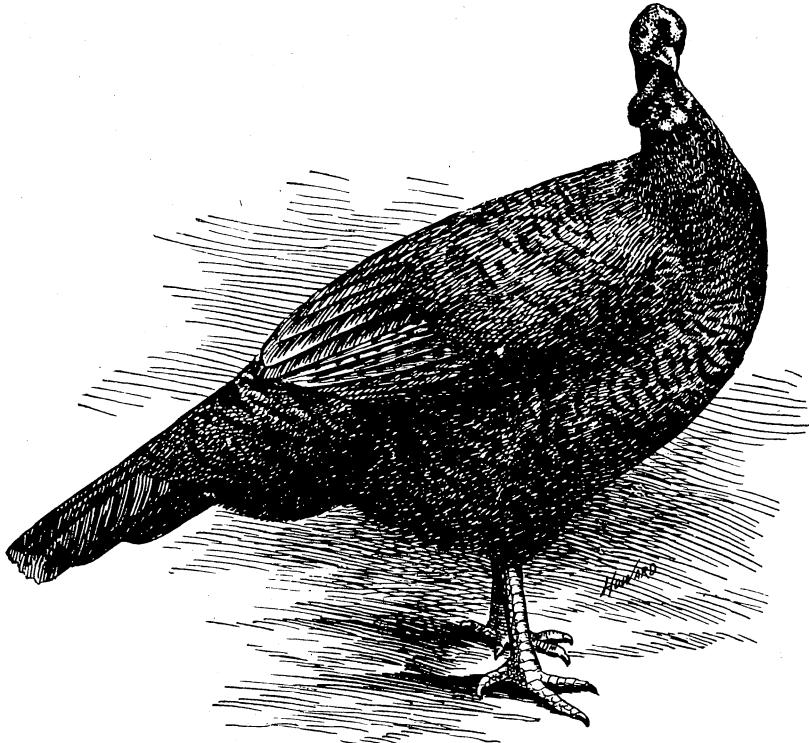


FIG. 6.—Slate turkey hen.

ally find them. They range from 10 to 25 pounds, according to age and sex. The standard weights range from 12 pounds for a pullet or

young hen to 27 pounds for an old tom, and in color they are slaty or ashy blue throughout, usually spotted with black. The black color ranges from small spots to larger markings, but the less of this the better for exhibition purposes. The female is usually of a lighter shade than the male. It might be surmised that the Slate turkey originated from a cross of White and Black turkeys. These, like the Buff turkeys, are not largely bred, though some value them highly; in fact, scarcely enough of them are grown to fairly determine their merit as market turkeys. It might be of advantage to all if more attention were given to the cultivation of these two neglected varieties.

THE WHITE TURKEY.

Origin.—In America the White variety is called the White Holland turkey. The reason for this is not apparent, though some think it is

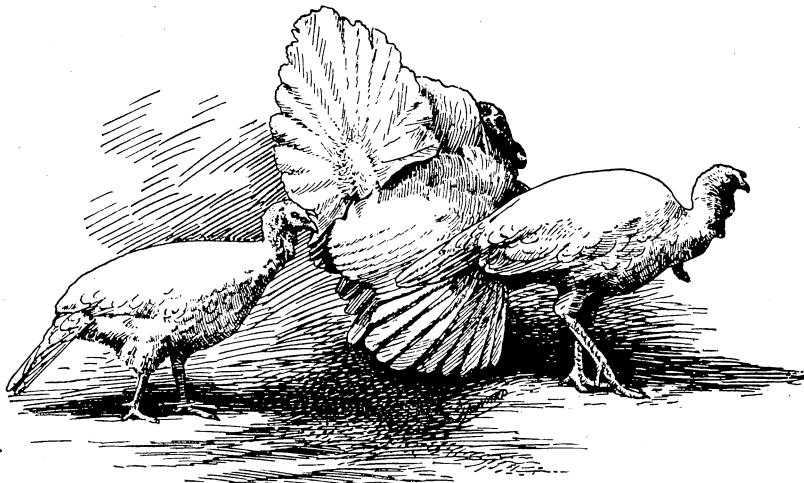


FIG. 7.—White turkeys.

so called because it originally came from Holland. While White turkeys may have been brought to this country by Hollanders, they are not natural to Holland. In English works they are referred to as "Austrian Whites." They have been known in England for over a hundred years, and are considered sports from other turkeys, which is more than likely the correct view. White turkeys (fig. 7) were formerly quite delicate and rather small, but now are more generally developed. This change is attributed to an infusion of the blood of White sports from either the Bronze or Narragansett varieties, which has improved both size and vigor, but detracted from the color of shanks and plumage. In some instances the shanks are not quite so true a pinkish white as is demanded, and the plumage is clouded; but this in no way detracts from their value for market purposes.

Size and color.—The standard of weight is less for the Whites than for other varieties. They range from 10 pounds for young hens to 26 pounds for old toms. Recently some toms have been seen that weighed 35 pounds in show condition, but this weight is quite unusual. In color of plumage they should be white throughout (except that each has a black beard on the breast), with shanks and toes pinkish white. Those that have the dark or slate-colored shanks show undoubtedly that they have resulted from a cross with some other variety.

Comparative value.—In some localities White turkeys are largely grown. They show a vitality equal to that of other varieties, and are no more difficult to rear. In one section visited the writer found by careful investigation that as large a percentage of Whites was grown during the very bad season of 1903 as of the other kinds. With some the Whites did the best. When the vigor is perfect and the mating birds nonrelated, the young of White turkeys are quite as easy to grow as any young turkeys.

One can not select a better variety for all uses than the White Holland. They grow to the most profitable sizes, dress beautifully for market, their light, pinkish white shanks add to their appearance, and with them, as with all white poultry, the pin feathers show less than in darker varieties. The very largest turkeys are not the most profitable either to grow or to sell. The medium sizes—from 9 to 18 pounds dressed—are most desirable for family use.

THE BLACK TURKEY.

Description.—This variety was for a time almost forgotten and quite neglected, but of late more attention has been given it, greatly to its advantage and improvement along the lines of valuable market qualities. The Black turkey of to-day is almost as large as the Bronze and fully its equal in many ways. This is due to crosses made with Bronze turkeys, and to proper selection thereafter. This variety is much the same as the English Norfolk turkey. No turkeys are more desirable for table purposes. When dressed they present the yellow color of skin and meat and the plumpness and finish that are desirable. The Blacks round up nicely at an early age, are quite hardy, and mature in time for the early markets. They dress to the most salable sizes, and by Christmas the young stock, if properly cared for, will attain the live weight of from 14 to 20 pounds.

Characteristics.—The Black turkeys, like the White, are more contented about home than most of the others, and while this is very desirable in some localities, it has its disadvantages in others where the large expanse of country furnishes suitable feeding grounds for the turkeys to forage over. The young are quite hardy when produced

by strong, healthy, nonrelated parents. When it is desirable to grow turkeys of the smaller sizes, and upon a rather confined area, one can not do better than to select the Black variety.

SELECTION AND TREATMENT OF BREEDING STOCK.

There are some rules that must be followed in the selection of turkeys for breeding, if it is hoped to succeed. Careless neglect has given no end of trouble to turkey raisers. In some instances which the writer has investigated, all the turkeys owned in one locality have descended from the one original pair purchased many years before. In one case it was said that for twenty years no new blood had come into the neighborhood. If this foolish procedure had been continued it would have resulted in the destruction of the constitutional vigor of the turkeys.

RULES FOR SELECTING STOCK.

A few plain rules which may be observed to advantage are as follows:

First.—Always use as breeders turkey hens over one year old. Be sure they are strong, healthy, and vigorous, and of good medium size. In no instance select the smaller ones. Do not strive to have them unnaturally large.

Second.—The male may be a yearling or older. Do not imagine that the large overgrown males are the best. Strength, health, and vigor, with well-proportioned medium size are the main points of excellence.

Third.—Avoid close breeding. New blood is of vital importance to turkeys. Better send a thousand miles for a new male than to risk the chances of inbreeding. Secure one in the fall so as to be assured of his health and vigor prior to the breeding season.

PRACTICAL SUGGESTIONS IN REGARD TO BREEDING STOCK.

Kind of hens to select.—No matter what variety of turkeys may be selected for keeping, they should, above all things, be strong, vigorous, healthy, and well matured, but not akin. Better secure the females from one locality and the male from another to insure their nonrelationship, rather than run the risk of inbreeding. In all fowls it is well to remember that size is influenced largely by the female and the color and finish by the male. Securing overlarge males to pair with small weakly hens is not wise policy.

A medium-sized male with good fair-sized females of good constitutional vigor and mature age will do far better than the largest with the smallest females. The wise farmer always selects the very best

corn or grain of all kinds for seed; equal care should be given the selection of breeding stock in turkeys. The best raised on the farm should be reserved for producers, and the fact should be kept in mind that turkey hens of the best quality in their second or third year of laying make the best producers. Keep your best young hens with this in view. Undersized hens that lack constitutional vigor are not of the least value for producing poult. The medium-sized, well-formed hens that have good strong bone and constitutional vigor are the kind to select for successful turkey growing.

Kind of males to select.—When we stop to consider that the male turkey is one-half of the entire flock in the matter of breeding we may be led to greater care in his selection. None can be too good for the purpose; constitutional vigor is of first importance; without this he can not have any value whatever for the purpose intended. Plenty of bone, a full, round breast, and long body are important. No matter of what stock or breeding the hen may be, the male should be selected from some of the standard varieties. He will carry with him the influence of his breeding. If the hens are of some standard variety, a male of the same variety should be selected so as to maintain the stock in its purity. Well-selected individuals of some one of the several standard varieties will give better results than can be secured by crossbreeding, which has a tendency to bring to the surface the weak points of both sides of the cross. Proper crosses may improve the first issue; if followed up, they rarely prove successful.

Number of females to one male.—The best rule for mating is to have four or five females to one male; some say twelve, and the writer has heard of a fine hatch and vigorous poult from a two-year-old tom with twenty hens; but this is unusual. When they are yarded and from eight to ten females are kept, it is better to have two toms and keep one shut up while the other is with the hens, changing them at least twice a week. When they run at large on a farm they will naturally divide into flocks; under such conditions one male to not more than six females is best.

CARE OF BREEDING STOCK.

Range for turkeys.—Turkeys may be yarded successfully when desirable. The larger the area available, however, the better the development. Young, growing turkeys, to do well, must have a range. It is not advantageous to keep turkeys on a small, confined place. Some have done well with them on 8 to 20 acres. Only a few can be grown in this way, and it shows the results of excellent care and consideration when success is attained in such limited quarters.

A wide range of territory for them to go over undisturbed is of vital importance; here they will select the kind of food most to their liking.

In the early spring and summer season such a range furnishes plenty of food and exercise for the breeding stock, and later the finest feeding grounds for the growing poult.

Best condition for breeding stock.—In caring for the breeding stock avoid having them too fat. When they can go about the barns and granaries they may become overfat. Boiled oats should be fed to them when they have a tendency to become so; wheat and some corn may also be fed to advantage. They should not be allowed to become too fat during the winter months, nor should they be allowed to go hungry or underfed. Where they have the run of the farm there is but little danger of their lacking food, if any stock whatever is fed on the place. They are untiring foragers, and at times greatly reduce their condition by hunting unsuccessfully for food. Wheat, oats, barley, and corn should be scattered about on the ground where they may

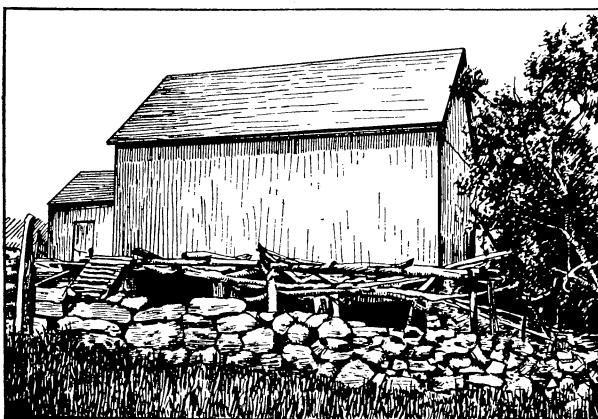


FIG. 8.—A typical turkey roost.

pick the grains up a kernel at a time. They must have plenty of fresh water, also grit and shell-forming material of some kind. They will travel quite a distance to visit a spring or stream of water, and eagerly devour bugs and beetles during the summer months.

One cause of inbreeding.—In mating it is quite unusual for the male to pair with the female more than once for a clutch of eggs, and hens will wander miles if necessary for this opportunity. Through this very natural cause has come the danger of destructive inbreeding in localities where growers who keep but few turkeys depend upon the one male in the neighborhood, who too often pairs with his own descendants, thus causing a lack of vitality in the young poult.

Roosting places.—Turkeys do better when they can roost in the open. If well fed, they will thrive more in the shelter of the trees than in a close, confined house. The troubles that arise from allowing them to live in the trees are that they become wild and frequently are

stolen. If housed, their quarters should be airy, roomy, and perfectly clean. It is not wise to have them roost with other poultry. If found necessary to confine them, all that is needed is a shed or house that will protect them from the elements and marauders of all kinds, and at the same time not be too confining for them. Place the roosts well up from the floor, and keep the interior perfectly clean and free from vermin.

In localities where it is not too cold during the winter months, it is better to allow the breeding stock to roost out in the open, either in the trees, or upon roosts prepared for them by planting posts that

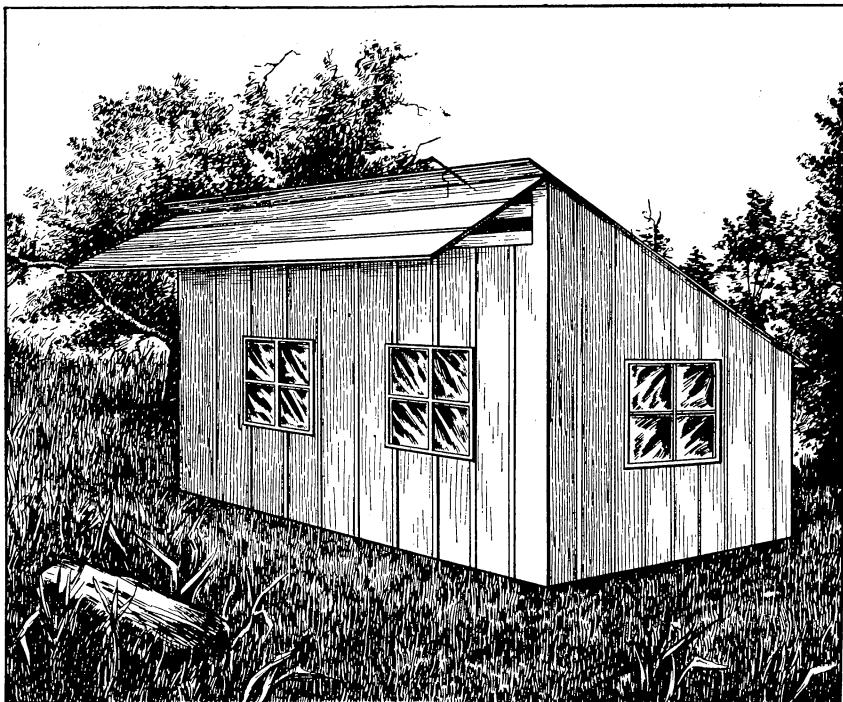


FIG. 9.—A turkey house (front view).

project about 8 feet above the ground. Upon these place long poles about 2 or $2\frac{1}{2}$ inches in diameter for roosts. Roosting places of this kind are better sheltered when located on the south side of a barn or building (fig. 8). The writer has seen a flock of turkeys which go the year round to such a roost; they belong to one of the most successful turkey growers of Rhode Island, and they live continually in the open, not having even the shelter of the trees.

Buildings.—In colder climates, where shelter must be provided, a house (figs. 9 and 10) may be built that is fashioned after many of our poultry houses with the slanting roof; an open ventilator should be

placed in front, close to the roof, and never be closed except in cold weather. The roosts should be placed on a level in the front of the house, with a sliding or rolling door in the rear. Only light enough is needed for the turkeys to see the way to and from the roosts. The door should be left open all day that they may come and go at pleasure. Within this house they may be fed in cold, snowy weather.

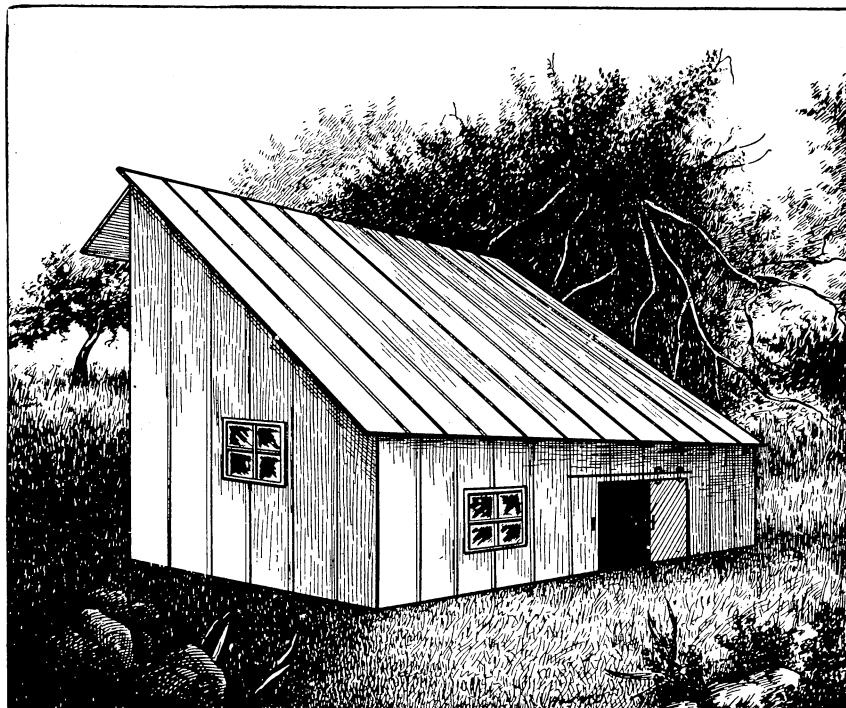


FIG. 10.—A turkey house (back view).

In the cold northern climate of Canada one of the most successful turkey growers has a double-inclosed apartment house for his breeding stock in winter, connected with which is an inclosed run that will protect them from the elements, at the same time furnishing opportunity for open-air exercise during the day. This kind of house is most useful in cold climates, but it might be used in all localities and prevent midnight marauders of all kinds from carrying away the turkeys.

EGG LAYING, INCUBATION, AND HATCHING.

EGG LAYING.

The hen turkey will begin laying from the middle of March to the first of April. In the warmer localities they begin to lay even earlier than this.

Pairing.—A feature of vital importance is assured fertility of the eggs. As soon as the hen turkey has paired with the male she pays but little attention to him for the time, being fully intent on locating a nesting place where she can lay her eggs (fig. 11). If perchance the pairing with the male has not been complete, her whole clutch of eggs will be infertile and her time and labor a total loss. The importance of vigor in the male is manifest at this most critical time. There is



FIG. 11.—Turkey eggs.

danger in having extra males that may disturb each other at the time of pairing. Therefore, never allow but one male turkey at a time to run with a group of breeding hens.

Gathering the eggs.—Much depends upon locality and climatic conditions. It often occurs that the hen turkey will begin to lay at a time when changeable weather may endanger the vitality of her eggs. She should be closely watched in her wanderings, so as to locate her nest and gather the eggs in order to protect them from the cold nights that may come at this early season of the year. It is better, when the necessity arises of taking all or part of the eggs from her nest, to leave eggs of some other kind in their place; large-sized nest eggs of china are the best. If all the eggs are removed she may become dissatisfied and wander away to locate her nest elsewhere, which may prove a disadvantage in securing the best results.

Hiding nests.—If unrestrained, the hen will naturally select some secluded place, under a pile of lumber or logs, or in the brush, for

example, where she can hide her nest, hatch, and bring out her young after her natural inclination. If she selects a place which is not well protected, it is better to provide a box or coop (fig. 12) with a suitable opening for ingress and egress to protect her and her eggs from the weather during the four weeks of incubation. In addition to this, the slat or lath frame may be placed over her a short time prior to the hatching of the eggs, so as to prevent the hen from wandering away with the young poult as soon as hatched. Those who favor the "perfect liberty" plan may secure larger flocks by following the above suggestions. Good care should also be given to the feeding of these semiwild flocks while young and in unusually wet weather.

Prepared nests.—Those who care for turkey hens with a view to quieting and domesticating them may readily induce them to select for

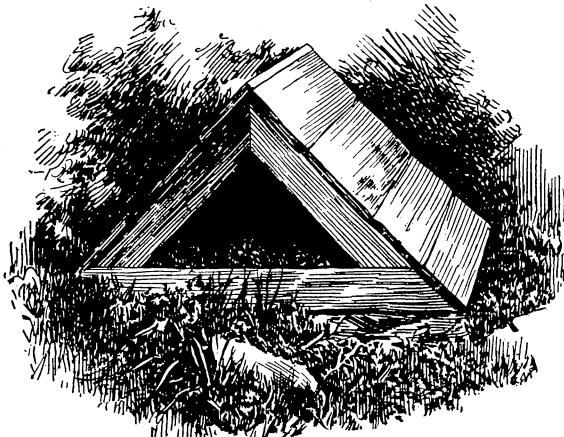


FIG. 12.—Cover for turkey nest.

nesting places empty barrels that have been turned on their sides for this purpose. Make the nests within of soft straw or hay, and the turkey hens will adopt these for their laying places if induced to come near them to feed. When they can not be made to select nests so provided, it may be necessary to confine them in a fair-sized inclosure until they are content to lay where it is more desirable. When the grower wishes to save all the eggs laid, provision must be made against the hiding of nests by shutting the hens into such inclosures. In this way they may be taught to lay in these nests, where they will sit when broody. From these inclosures they may be given freedom to roam about after 3 or 4 o'clock each day, or after they have laid. When roosting time comes, either coax or drive them back if they do not go voluntarily. By so doing one may have eggs to sell or set at will. Turkey hens will lay from 15 to 20 eggs before becoming broody, and it is not unusual to break them up from sitting the first time, have

them lay again, and permit them to sit on their second clutch of eggs. When this is done the hen turkey should be fed plenty of grain, grit, and shell-forming material.

HATCHING.

Hatching by hens.—Turkey hens produce such a limited number of eggs that it is scarcely necessary to bring into use the incubator for their hatching, as the hens themselves can hatch all they lay, or nearly all. Moreover, the fact that the turkey hens are almost indispensable to the successful rearing of the poult makes it an absolute necessity that they should hatch some of their eggs, so as to induce them to brood the poult. Quite frequently some turkey eggs for hatching are given to chicken hens of large size, and the poult they bring from the eggs are given to the turkey hen to rear. Chicken hens brood the poult quite as well as the turkey hens up to a certain age, at which time the poult begin to wander. If other broods of poult are with turkey hens, those with the chicken hen will usually leave their foster mother, wander away with a flock of turkeys, and stay with them.

Age of hens.—When there is an opportunity for choice, hens that are two years old or over are the best to select for hatching the eggs. The continual strain of four weeks sitting demanded for hatching turkey eggs is quite a trial of patience and endurance, and while many young hens do their part to perfection, it is safer to trust the task to older hens if you have them. Eggs from hens that are two years old and over produce stronger and more vigorous poult than do eggs from yearling hens.

Danger from insect parasites.—Whether the eggs are hatched by turkey hens or chicken hens, equal caution should be used to prevent the possibility of insect parasites of any kind being in or about the nest or upon the body of the hen. A dirt foundation covered with some slaked lime is a good beginning in the construction of a nest. Upon this should be placed a fresh nest of soft straw or hay. No other enemy is so destructive to young poult as lice (see p. 36), which are very apt to infest them as soon as they are hatched, if a determined fight is not made to prevent it. After the poult have begun to grow, they must be watched continually to guard against the presence of the lice.

Period of incubation.—It takes twenty-seven to twenty-nine days for turkey eggs to hatch. Those that are perfectly fresh will hatch a few hours sooner than those that have been kept a week or longer before placing them under the hens.

Number of eggs for a sitting.—The eggs are usually fertile; quite frequently each egg in the nest will produce a living poult. Place under each hen just as many eggs as she may properly cover—no

more. Some may cover fifteen better than others will cover nine. If the hen is given too many eggs, a poor hatch is likely to result.

Two broods in a season.—When broody turkey hens are driven from their nests, they are quite likely to quit their eggs and select another location where they will nest and lay the second clutch of eggs. Some turkey hens will rear two broods in a season when permitted so to do. Late-hatched poult's are not desirable for winter roasts, nor are they valuable for breeding stock, but they may be grown for broiler poult's and sold to good advantage.

Feeding the sitting hen.—While incubating their eggs the hens should be supplied with food and water; these should be placed close at hand where they may go to them at will; or their coming from the nest, as they will each day, should be observed so that they may be fed and watered. Good sound wheat and corn are best for their food at this time.

The use of incubators.—The eggs of turkeys can be hatched in incubators quite as well as the eggs of other fowls. It is preferable, however, to have them hatched by the hens that are to brood them; in fact, this is the prevailing custom. There is a feeling of confidence when the eggs are in the care of a broody hen which does not exist when artificial methods are employed which depend for success on the care of an attendant.

Use of brooders.—The growing of poult's in brooders has been tried to some extent. The difficulties in the way are as follows: The poult's do not seem to realize that they should look down to the floor for food; they run about with their head up, peeping continually for food, until many die from exhaustion. To overcome this, the food is taken between the fingers and held close to their beaks to induce them to eat. This must be done many times a day for several days, to keep them alive and to teach them to eat. Turkey hens that have reared a brood or two will usually do better with poult's than young hens with their first brood. Hens that have had experience make the best mothers, as they pay early and special attention to teaching their young to eat. Some prefer chicken hens to start the young poult's, as they devote more attention to teaching the poult's to eat.

GROWING THE POULTS.

The most difficult part of turkey raising is to know how to care for the poult's—to know what to do and when to do it. All that one can learn from others or from reading will not be of equal value to one year's actual experience in caring for them.

METHODS OF HANDLING.

There are almost as many ways and methods of feeding as there are localities where turkeys are grown. A considerable number who allow their turkeys a good deal of freedom will succeed; others do equally well who follow methods quite the reverse. Some never house the mother hen or the young, while others house them both.

Semiwild nature of turkeys.—While our present-day turkeys are classed as "domestic fowls," they are rather semidomestic when compared with other poultry. For this reason the treatment given them must differ from that given to hens and chickens, and houses or coops that will serve for the latter will not meet the wants of the turkey hen. She must have a house or box in which she can stand erect and stretch her neck and look about. The floor of this must be clean and dry for the poult; it may be of boards, but dry, clean earth is best for both the hen and the poult. This natural environment has a beneficial influence upon the mother and the young turkeys. It adds to both health and spirits, and helps to develop constitutional vigor.

Danger of overdoing.—Satisfactory results can never be secured by handling turkeys like cage birds or hothouse plants. Avoid overdoing the care and attention. Treat them like turkeys, and use common sense in looking after them. Their native home was in the woods and fields; in their present semidomestic condition they need more shelter and care, but they should never be shut in so close as to deprive them of plenty of light, room, and air. They should not be pampered and fed upon unnatural foods; neither should they be overfed at any time. In their wild state they ran about here and there, seeking small grains, seeds, and bugs, getting plenty of exercise as well as food. Their domestic condition deprives them of the necessity of hunting for their food, and consequently of the exercise that comes from so doing.

Danger of neglect.—When quite young, the poult are apt to receive more attention than they need. Then, as they grow older and the novelty of attending to them wears off, they are too often neglected just at the time when more care should be given to them. For instance, when their feathers are growing and the unusual heat overcomes them, special care may profitably be bestowed; again, the same is true when the frost destroys their natural food supply in the fall. Thousands are lost at these critical periods from lack of a full food supply.

COOPS FOR MOTHER AND YOUNG.

Kind of coops to use.—An open coop, made of slats or lath, may be placed over the mother turkey just prior to the hatching of her eggs, as this will prevent her wandering away with her young when they are hatched. It may be covered on top with tar paper as protection

from rain or sun. Such open coops are frequently used in turkey-growing districts, and those who use them could not be induced to change. They should be large enough to provide plenty of space for the mother turkey. Quite often a box too small for the hen to turn about or to stand erect in is used for a coop for the hen and poult. This annoys her and she becomes restless, tramps about, kills her young, and is blamed for taking bad or indifferent care of her offspring, when more than likely if she had room to move about she would be a model mother for the poult.

In a suitable coop, the brood of young turkeys can stay for a day or more in comfort, sheltered from wet and storm or cold, with space enough to move about. In such a coop the very young poult can stay while the mother goes about on the outside for exercise. To have this use of the coop when the hen is out, set up in slides inside the door a piece of board a foot wide; this will keep the poult safe from the hot sun or the wet much better than will the triangular pen so often made of three boards.

Almost any kind of pen, coop, or house will do for the turkey hen and poult if it will protect them from rain and storms, if it is large enough, is clean, not too close or warm, and absolutely free from parasitic enemies. These are the important requisites of the structure in which they are to be kept until the poult are well started. They should be allowed their freedom a part of every day when the grass is dry, and should be made to stay within at nights and during wet days, till old enough to wander with the mother hen and roost out on the fences or trees.

Treatment of old coops.—Either fresh coops should be provided each year or the old ones should be thoroughly cleansed within and without. Prior to using old coops, paint them thoroughly with crude petroleum in which have been dissolved some naphthalene balls, filling every crack and crevice with this at least a week before they are needed, and be sure that the odor of the preparation has disappeared before using the coops, as it is not beneficial to the young. The features of most importance in cooping the mother and young are plenty of light and room, and freedom from dampness and insect parasites.

REMOVAL FROM THE NEST.

When the poult are ready to leave the nest, move the mother hen and her young into the coop provided for them; supply a little food now and then as they need it, and see that the mother has plenty of food and water. Let them alone in the coop till they begin to move about. As soon as they will, let the poult run out on the grass when it is dry, but keep them from the wet grass, as nothing is more detrimental to their growth, unless it be insect parasites. As they

advance give them a more plentiful food supply, and guard against any possibility of lice infesting them.

Protection from sun's rays.—While they are young special attention must be given to protection from the direct rays of the sun, exposure to which wilts them completely. At times they will reel under its influence as though suffering from sunstroke, or move about with slow steps, weakly dragging one foot after the other, while giving forth a feeble peep that sounds the warning of their approaching end. The blood-sucking parasite has much the same effect upon them when present. When under the influence of both at the same time the chance of survival is small indeed.

Protection from dampness.—Have a dry spot where the young poult may run and exercise. This may be provided by spreading a load or two of coarse sand near the coops, which will furnish a dry foothold no matter how wet or damp the grass may be. To keep this in sanitary condition go over it once a day with a fine-toothed rake, in order that the sun may dry it thoroughly. When the young turkeys are suitably housed, properly fed, and kept free from lice, they are quite as easy to grow as young chickens.

FEEDING THE NEWLY HATCHED POULTS.

Variety of methods.—A thorough investigation of the methods of feeding young turkeys shows to what extent general rules already cited are followed. While all who succeed seem to adopt nearly the same methods, there are a few differences worthy of consideration. Some feed bread and milk in a saucer as soon as the poult will eat, while others soak bread and milk and squeeze it dry before feeding; some adhere closely to an absolute grain diet, while others feed everything they imagine the poult will eat.

Copying nature.—It should never be forgotten that in the wild state their food was the bugs, worms, seeds, etc., which they could find for themselves, and which were hunted for and scrambled after continually. There was then no overfeeding upon rich unnatural foods that impaired health and produced bowel troubles or other ailments that naturally follow unwholesome food. They subsisted by their own efforts in the wild state, while now they are quite too often forced to eat unnatural foods that are furnished in hope of forcing them to an unnatural growth. If the grower wishes to copy nature as nearly as possible, the young poult may be given for their first meal very fine oatmeal or finely cracked wheat or corn, with a little fine grit of some kind and a very little granulated meat scrap. Some of the commercial brands of "poultry food" are also good. They should have clean water convenient where they can help themselves at will.

Use of bread and milk.—As a general rule do not feed them wet food

or slops. Poult are seed-eating chicks, not slop eaters. Bread and milk, however, contains elements most valuable in the growing of all kinds of fowls. This food should be considered, when properly given, as one of the best kinds of food for the first day or two. Soak stale bread in sweet milk, press out the milk as completely as possible, and feed the bread to the young poult. Be careful never to use sour milk, nor should the bread thus prepared ever be fed after it has become sour. Feed this, a little at a time, every hour or two for two days or more; then add a little hard-boiled egg, shell and all broken fine, to the soaked bread.

Meat in the ration.—After a day or two on this ration, follow with the ration of finely broken grain already described, and include a little finely cut meat. Make sure that the meat scrap is pure and sweet. Nothing is more injurious to the poult than tainted or infected meat of any kind, as it will disturb their bowels in a very few hours and cause great trouble. Lean beef, well cooked and cut into very small fragments, is good. Be very cautious about feeding green meat or bone. If any of this is fed, have it cut quite fine, giving but little at first, and be absolutely certain that it is fresh and sweet. Cooked meat is better for them while young.

Supply of grit.—Coarse sand is excellent for grit, and if sufficient of this is at hand no other grit will be needed; but plenty of grit of some kind is a necessity, for without it the poult can not grind their food.

Danger of overfeeding.—Food should be given them quite early in the morning and at frequent intervals during the day. Never overfeed them, but use discretion in providing plentifully for their necessities. Give them all they will eat willingly and no more. Avoid the use of rich foods, grains in hulls, and millet seed, which is not good for them while they are young; a little of this seed, however, may be fed as they grow older. Too much hard-boiled egg is bad for them, while a reasonable amount with bread is beneficial. An excess has a tendency to clog and congest the bowels, and the writer has seen poult die from the effects of a diet exclusively of egg and millet seed. The same injurious effect may be produced by feeding entirely with milk curds.

Bowel trouble.—Bowel trouble must be considered as an assured result of improper feeding, and may be aggravated by exposure to cold and dampness. Indigestion is a prime factor in the development of this ailment that kills so many turkeys while young. This should be prevented so far as possible by the feeding of finely broken charcoal, which is a safeguard against fermentation in the crop or gizzard, thus aiding digestion. This looseness of the bowels should not be mistaken for cholera. It may usually be relieved by feeding rice that has been boiled almost dry in milk.

Hand feeding.—Too much stress can not be laid upon the practice of hand feeding. The turkey hens are not so attentive to their young as chicken hens. If all who grow turkeys would pay special attention to hand feeding of the poult as soon as they are hatched, much benefit might be gained. To be successful with hand feeding, one must take the food between the fingers and thumb, patiently hold it to the beak of the young turkey, and try to induce it to eat. This method of feeding tames and quiets the young poult, gives them a good start, and prevents the possible contamination of the food by being thrown upon the ground. Although feeding in this manner may appear to involve considerable labor, the resulting benefits are often far in excess of the time and effort expended.

FEEDING THE POULTS AS THEY GROW OLDER.

Food and treatment.—After three weeks the poult may have whole wheat, hulled oats, cracked corn, and a little millet seed, in addition to their other food. Many young turkeys are lost when partly grown, particularly during wet weather after they have been given liberty to roam at will. Much loss may be avoided by going after them wherever they may be and feeding them a little once or twice a day. This plan should be followed during continued wet weather, no matter how far advanced they may be. A continuous wet spell deprives them of the greater part of the bugs and worms they feed upon, and the wet grass, by retarding their motion, tends to reduce vitality. Go after them during such weather and feed them, so as to prevent the bad results that must follow a scarcity of food at such times. Flocks of young turkeys that wander continually should be fed at least once a day, if only a little, to keep them quiet or tame. If fed at least once a day on grain, they will grow faster, mature earlier, and make better size than if not fed at all. Those who make use of these methods secure the best results.

A practical example.—One of the most successful growers in the country feeds the young poult at the start oatmeal, broken wheat, and finely cracked corn; as they grow older whole wheat, hulled oats, and coarser cracked corn, and still later, whole grains of corn. When running at large they are taught to come close to the barns twice a day for food. Following these and similar methods enabled him to bring to maturity, during the unfavorable season of 1903, over 300 white turkeys out of about 335 that were hatched.

Feeding oats.—Hulled oats are used to avoid the injurious effects that arise from feeding oats in the hull, the sharp portions of which are apt to prick and irritate the crop. No more nutritious grain can be fed to growing poult than hulled oats. Wheat and whole or broken corn will do as they grow older, but oats should be added when-

ever practicable. If hulled oats can not be had, use clipped oats, boiled; drain them thoroughly, and feed when cold. Always select plump, heavy oats, with a large percentage of kernel.

Avoid unsound grain.—Nothing equals good sound grain of all kinds for feeding the growing turkeys. Do not use poor, shriveled, or musty grain of any kind. It is a mistaken notion that it will pay to feed inferior grain to any kind of growing fowl. It is a loss of both time and money to do so, as nothing but disappointment can result from its use. The best results always come from having the best quality of stock and giving it the best food and care.

FEEDING FOR MARKET.

EARLY FALL FEEDING.

The best ration.—As soon as the weather begins to turn cold and insect food becomes scarce, an increased grain diet must be provided for the growing turkeys. A ration of wheat and corn is the best. Do not feed them too much at first, but gradually increase the supply until they are having all they will eat.

Plenty of food with no confinement.—Those who succeed best in having the turkeys ready and in fine condition for the early market are those who allow them their freedom and feed them all they will eat of wholesome fattening grain. Even when finishing them, it is not well to confine them. If they are fed each day at regular hours and at the same place, it will be an easy matter to have them come three times a day to this place to be fed. Their longing for food being fully supplied, less violent exercise will be taken, and the energy that would be expended in their wanderings in search of food will be directed in the more profitable channel of growing and developing for market. Turkeys that are poorly fed during the fall expend in seeking food that is no longer attainable considerable of the flesh they may have gained.

Turkeys compared with hogs and cattle.—When feeding turkeys for market it must be remembered that they will sell for considerably more per pound than can be obtained for hogs or cattle, while the actual food cost per pound of turkey meat is but little if any more than for hogs or cattle. It will always pay well to give to growing turkeys all the grain they can eat.

HEAVY FEEDING.

Advantage of the early market.—Keep them growing from start to finish, and have them ready for the Thanksgiving market, when prices are usually the best. This may be accomplished quite easily with all the early broods, provided they are properly and liberally fed as the

fall weather begins to remove their natural food supply of worms, bugs, seeds, and herbs of all kinds. In feeding for market, the end most desired is complete growth and the greatest possible weight by Thanksgiving time. The records of years show the highest value for market turkeys to have been reached during the last week of November. While the demand is not quite so brisk at Christmas time, the prices are almost as high.

What and when to feed.—Old corn is better than new for heavy feeding, as the latter is apt to cause looseness of the bowels. If necessary to use new corn, it should be introduced into the ration gradually. If the poult's have gained a strong, well-developed physique by early fall, they will be in fine condition for heavy feeding. As soon as they have become accustomed to grain feeding, they may be fed once or even twice a day on ground oats and corn meal mixed with milk. This should be given in addition to an abundance of wheat and corn. They should be fed each time just what they will eat up clean with a relish. Feed the grain mornings and evenings, and the mixture at noon or twice between morning and evening as best suits your convenience. See that plenty of sharp grit is always at hand for their use and provide a constant supply of fresh water where they may help themselves.

Feeding for a fancy price.—Some who grow turkeys for a fancy market feed them chestnuts and celery seed during the last few weeks of fattening. These are rather expensive articles of food and can only be used by those who sell their product for almost double the average market price. Such feeding imparts a pleasant flavor that adds value to the turkeys which are finished in this way, and these find ready sale at the highest prices for the tables of those with whom cost is a minor consideration. Where the scale of prices is regulated solely by quality, the finest selected grades will sell from 9 to 12 cents per pound higher than will the lower grades. To grow the best is quite as easy and but little more expensive than to grow the poorer grades, and the profit gained is almost double.

ENGLISH METHODS OF FEEDING.

Feeding in confinement; the ration.—The English methods differ somewhat from those followed in America. Some confine their turkeys either in small inclosures or in houses, while others feed profusely morning and evening and range them during the day. The inclosures or yards are fenced in with wire; the turkeys are kept within this limited range, and are fed heavily twice a day on a mixture of ground oats and milk in the morning and whole oats at night. Some add boiled vegetables, while others feed a mixture of ground oats, barley, and corn, equal parts, with table scraps, boiled carrots, potatoes, and other vegetables mixed with milk. This has a tendency

to make the flesh plump and white. Near the end of the feeding, some fat—suet or butcher's scraps—is cooked and mixed into the mash.

Crate fattening and cramming.—Some go so far as to crate-fatten, just as chickens and other poultry are finished for market. Another plan is to cram them every morning and evening and drive them out to pasture during the day. They are crammed with boluses made of barley meal, potatoes, some small-cut greens, and a little bran. These are dipped in milk and pushed down the throat, enough being fed in this way to fill the crop.

Results of English methods.—The English method of feeding produces a full supply of flesh upon the carcass, which is of the whitish or pinkish-white color so popular in all foreign countries. Their methods of feeding make solid meat with not so much fat as is produced by feeding more corn. When corn is largely fed, there is a gathering of fat under the skin and in the interior, as well as between the tissues. The globules of fat between the tissues of fowls fed on more oats and less corn are firm and solid. The fat from corn feeding is not so solid and is less dense in composition. While the American method of feeding increases both size and weight, it will not produce so desirable a quality of meat as can be grown from the English way of feeding.

In using ground oats, it is always better to remove hulls from the meal. These hulls are no better as food than an equal amount of straw, and it requires more grinding in the gizzard to reduce the hulls than it would to grind double the amount of grain. There is no reason why the fowls should waste energy in grinding a useless substance when it may be prevented.

FEEDING STOCK TURKEYS.

Separation from market stock.—Few growers separate their stock or breeding turkeys from those intended for market. Entirely too many growers feed them all together, sell the most thrifty for market, and keep the least matured for producing stock. This is a great mistake; the very best should be selected for producing stock, and the rest fed for market. Those selected for use in breeding, however, should be separated and fed by themselves if possible. The best food for stock turkeys is boiled oats drained of all moisture, some wheat, and a little corn. This will keep them in good healthy condition and quite full enough of flesh. It is a mistake to keep as producers fowls poor or thin in flesh. They must be in good condition, plump, but not overfat.

Prime condition and how to secure it.—For the best results in egg laying, hens should be neither too fat nor too lean. The yolk of the egg is normally one-third fat, about one-sixth protein, and the remainder water. The hen must have enough substance to her body to

insure the production of the eggs. An excess of fat in the body arises from too much fattening food during the season of no egg production. Hens actively engaged in egg producing seldom become overfat. If kept in prime condition out of laying season, they may be well fed on boiled oats, wheat, and some corn, when the laying season is at hand. The main point in feeding stock turkeys out of laying season is to feed them enough fully to sustain their physical condition and health, so as to have them in proper condition for egg production when the time arrives. Then a suitable ration for egg production may be adopted.

MARKETING.

After the turkeys are grown and ready for market, quite as much care and attention should be given to the killing and shipping as to the proper growing. Where these things can not be done to good advantage, it is better to sell them alive. Buyers who are prepared to kill, dress, pack, and ship turkeys, and to save the feathers, should be in position to pay what they are worth alive; and should be able to handle them at a profit, better than can the grower, who may not be prepared to do the work to advantage. So much depends upon marketing them in the best condition that small growers should either dress and sell to their home market or, providing it can be done at a fair price, sell alive to someone who makes a business of handling such stock.

KILLING.

Kill nothing but well-fattened stock. It seldom pays to send ill-favored stock into market. Do not give any food to the turkeys for twenty-four hours prior to killing. This allows the crop and entrails to become empty and avoids much of the danger of spoiling. Full crops and entrails count against value; they often taint the meat and prevent its being kept for any length of time.

Methods of killing.—There are two methods of killing largely used. The most popular is to suspend the fowl by the shanks, head down, and cut or stick it in the roof of the mouth with a knife made especially for this purpose. This severs the arteries and cuts into the brain, causing insensibility and a free flow of blood from the mouth. This is called sticking in the roof of the mouth.

The other plan is to break the neck by a quick twist or jerk backward. When the neck is completely disjointed the head is pulled away so as to form an open space in the neck in which the blood may settle. This plan has been but little used, though the claim is made that when so killed the fowls will keep longer, because there is no opening by which the air can get into the body, as there is when they are stuck in the roof of the mouth. This method has been more used

for chickens than for turkeys, and to use it well requires considerable practice.

The method of beheading with an ax or hatchet has been employed for ages.

DRESSING.

Dry-picking.—Dry-picking is always to be preferred when preparing the fowls for market. When in fine condition, nicely picked, and sent to market without having been packed in ice, a turkey is at its best, and consequently commands the highest price. As soon as the fowl is stuck and the blood is still flowing, pluck the feathers dry from its body, taking care in doing this not to break the skin or tear the flesh. Nothing detracts so much from dressed poultry as torn places upon the carcass or shank; picking must be clean and nicely done. When the fowl is plucked hang it head down in a cool place until all animal heat is gone from the body, being careful not to hang it where it will be so exposed to cold air as to be likely to freeze. Do not remove the head, feet, or entrails, but have the whole carcass, including head and feet, perfectly clean.

Scalding and picking.—The method known as scalding and plucking is too familiar to need comment further than to say that care must be taken not to scald or tear the skin or shank. Perform this operation as neatly as possible. As soon as the animal heat has left the body, the appearance of the dressed turkeys may be improved by submerging for a short time in cold water, as this has a tendency to make them plump whether dry picked or scalded. The plucking should be done as quickly as possible; the more quickly done, the more readily can the feathers be removed.

PACKING.

For shipping, pack as closely as possible into close boxes or barrels, nicely lined with white or manila paper; do not use brown, soiled, or printed paper. Have the package completely filled so as to prevent the poultry from shifting about in transit; do not use hay or straw for packing, as it marks or stains the fowls and detracts from their value. The above method can only be used when the poultry is sent to market without being packed in ice, and when this can be done with safety, either in refrigerator cars or for a short distance in cold weather, it is by far the best. The greater part, however, must be packed in ice. When necessary to do this, use nice clean barrels. Cover the bottom with broken ice; then put in a layer of poultry, then a layer of ice; continue thus till the barrel is packed solid and full. Always use perfectly clean ice for packing. Head the barrel tightly and mark its contents plainly on the head, and never ship mixed lots of poultry in the same package if it can be avoided.

PARASITES AND DISEASES.

No kind of young poultry is so susceptible to the effects of unfavorable conditions as young turkeys. They must be carefully protected from attacks of parasites and from excessive heat and dampness until they have gained sufficient strength and size to wander away with the parent turkeys and care for themselves upon the range.

INSECT PARASITES.

The chief danger from lice and mite attacks to the poult is directly after the poult are hatched; but the best remedy is to deal with the hen before the young are hatched. The plumage of the hen should be dusted with insect powder close down to the skin from head to hock joint, being careful not to get it into the eyes. This should be done at least twice a week until within two or three days before hatching. The most careful attention should be given to this. Never use lime or sulphur for this purpose. Nothing is better than Persian insect powder, but any good insect powder will answer the purpose if it does not contain ingredients that are injurious to the eyes.

It may often occur, however, that the hen will not have been properly treated, and so lice and mites will be found on the young; and, in order that the poult may live and thrive, they must be freed of these enemies. As soon as the young are ready to leave the nest they must be examined carefully for lice, which may be on top of the head, under the throat, or about the wings or vent. Some of them are gray in color and difficult to see. They may be destroyed by the use of sweet oil, rubbing a very small amount upon the head and throat; insect powder is sufficient for the other parts of the body. It is very important that only a small amount of the sweet oil be used, as too much is injurious. Kerosene should never be used to destroy parasites.

GAPES.

After external parasites, the most destructive ailment of young turkeys is the gapes.

Cause of the trouble.—This comes from certain small worms that are picked up by the young turkeys in places that have become infested with them. Some believe that the angleworm is the cause of the spreading of gapes, and it probably is one of the causes. It is possible for the angleworm or other worms to be infested by gapeworms, and thus, when eaten, to cause the gapes in young chickens and turkeys. Whenever the ground is infested with the gapeworm eggs they may readily infest all the angleworms in the same soil, and the eating of these may cause the infestation of the young poult.

Treatment.—Many remedies are recommended for this ailment, few of which have ever proven of much advantage. A feather or a twisted

norse hair may be introduced into the windpipe for the removal of the gapeworms. Some recommend the feeding of finely chopped garlic and of turpentine in the mash, while others suggest the mixing of a teaspoonful of naphtha or benzine in enough mixed food for a dozen poult. The theory of the use of these remedies is that the fumes from the turpentine or the benzine will pass through the entire body and into the windpipe and destroy the gapeworm.

These remedies are known to have destroyed as well as to have cured, and great precaution must be observed in their administration; try them on a few at a time and do not risk the destruction of the whole flock. Another remedy is to place the ailing chicks in a box over which has been stretched some cheese cloth; take some very dry air-slaked lime and sift it down onto the poult or chicks through the cheese cloth; this fine dust will penetrate the nostrils and throat and cause a violent coughing and sneezing, which tends to dislodge the gapeworms and give relief. It is, however, a dangerous remedy which should be cautiously used rather as an experiment than as an absolute cure.

Prevention.—No saying could be more truly applied to this ailment than “a pound of prevention is worth a ton of cure,” and cleanliness is the only sure preventive of gapes. Where the ground has become infested, a very thin coating of slaked lime should be scattered all over it early in the spring before the frost is out of the ground and allowed to lie there until the frost disappears, leaving the ground almost dry; then take a hoe and scrape off all the lime and one-half inch of the soil, cart it away, and bury it at least four feet under ground.

Another plan is to sprinkle the soil with water into which has been mixed some sulphuric acid; after twenty-four hours cover the surface with lime and turn the soil under with a plow. A surer and better way than this is to remove your poultry plant to an entirely new part of the farm where there is no danger of infestation, then spread a coating of lime over the infested land and plow it under and cultivate it for a year or two.

Examinations made by opening the windpipes of dressed turkeys during the winter have frequently revealed the presence of two, three, or four gapeworms attached to the lining membrane of the windpipe; thus is shown the possibility of carrying the infection over in grown birds, which must likewise be provided against. The grown turkey might be carefully subjected to the lime-dust treatment as above, to produce coughing or sneezing; and some of the mucus may be taken from the throat with a fine platinum loop and examined under the microscope for worm eggs. Those showing evidence of the presence of the worms should be kept isolated and treated until they are known to be free of the worms.

BLACKHEAD.

In many localities turkey growing has become almost extinct as the result of the scourge known as blackhead. This disease was first noticed in New England, but quickly spread throughout the entire country.

Nature of the disease.—It first attacks the cecum—the blind gut situated between the large and small intestines. It also attacks the liver, this organ becoming very much enlarged, often to twice its normal size, and showing over its surface discolored spots varying from one-eighth to two-thirds of an inch in diameter, shading in color from whitish lemon to dark yellow.

While this disease is attributed to microbes, it is thought to be very much aggravated or increased through inbreeding. In other words, many attribute the prevalence of what is known as blackhead to the depleted vitality of the stock of breeding turkeys making it possible for the germs to grow and gain destructive foothold.

Symptoms.—Diarrhea is the most marked and constant symptom, and may be expected sooner or later in the course of the disease; it results from inflammation and internal weakness. A peculiar discoloration of the head occurs when the disease is at its height, which has led to the popular designation of blackhead. This disease attacks very young turkeys and often lasts for several months before causing death. The fact that the propagation of this affection is more active during mid-summer has led to the belief that it is exclusively a summer disease.

Treatment.—The use of medicine has not proven very successful. Among the remedies most recommended are sulphur, sulphate of iron, quinine, and salicylic acid. Sulphur may be given, 5 to 10 grains being combined with 1 grain of sulphate of iron; or sulphur, 10 grains, sulphate of iron, 1 grain, and sulphate of quinine, 1 grain. It is necessary that such treatment be repeated two or three times a day and continued for considerable time to obtain results.

Some people who have had experience with this ailment in recent years believe that it results largely from inbreeding, the infection being transmitted from one flock to another by affected birds or eggs. The remedies applied proving of little benefit, the only alternative is the introduction of new, strong, and healthy stock. Some have gone so far as to destroy their entire flocks, and, after having thoroughly disinfected the premises, started with new, healthy stock, while others have introduced wild blood into their flocks.

In all bowel troubles in turkeys, feeding boiled rice has proven of benefit, and it has been largely practiced by experienced growers. Many feed the boiled rice to the young poult to prevent the coming of the destructive diarrhea. The most successful way to obviate a dangerous looseness of the bowels is to avoid feeding wet or sloppy

food and guard the young from taking cold. The feeding of small particles of charcoal is beneficial to the young from the fact that it sweetens the crop and gizzard and prevents fermentation, which is very injurious and destructive. Above all things, never make use of infected turkeys for breeding stock.

TAPEWORM.

Tapeworm and worms of all kinds are very injurious to turkeys.

Symptoms.—The presence of the tapeworm may be recognized through the indolent, drowsy spirits of those infested with it; a careful examination of the voidings will also reveal its presence, as those infested will pass small portions of the worm.

Treatment.—Powdered male fern is an effective remedy, and may be administered in doses of from 30 grains to 1 dram of the powder; or of the liquid extract, 15 to 30 drops. This should be administered morning and evening before feeding, the minimum dose to the younger, increasing the dose as they grow older. Oil of turpentine is an excellent remedy against worms of all kinds which inhabit the digestive organs of poultry. A common remedy made use of by some for the removal of worms from fowls is one drop of kerosene oil night and morning. This should not be administered to the very young, but may be used with impunity after they are a few weeks old.

DIARRHEA.

Looseness of the bowels or diarrhea is quite too often mistaken for cholera; but such looseness may come from any of several causes, such as bad feeding, dampness, filth, or infestation with lice. The removal of the cause is the very best cure. Feeding boiled rice and a little charcoal, as already stated, will prove of great benefit. The remedy most often used is a mixture of equal parts of ground ginger, cinnamon, cloves, and cayenne pepper. This is mixed into the mash food, about a stroked teaspoonful to a dozen very young poult. Double the amount after they are four or five weeks old. What is known as Sun cholera mixture is very beneficial, either when mixed in the drinking water or the mash food. This may be given so that each would have from 5 to 20 drops at a time, according to age.

CHOLERA.

Cholera, when present in its true form, is a most uncompromising disease. The only thing that can be done to save a flock of turkeys attacked with true cholera is to remove all the ailing ones immediately and destroy them. Transfer those not attacked to some other part of the farm and thoroughly disinfect and clean up the locality where they

have been, feeding nothing but a slight grain diet for a short time. Medical treatment has been of very little service in this ailment. The drugs that have been used are sulphur, copperas, capsicum, alcohol, and resin, either administered separately, or equal parts thoroughly mixed together and administered in the mash food.

Diarrhea and blackhead are often mistaken for cholera. If it is always remembered that the carcass, no matter from what cause the fowl may have died, should be either burned up or buried at least 4 feet underground, no infection to other fowls is likely to result. No other known cause of the spreading of the disease equals the permitting of dead bodies of infected fowls to lie about.

Turkeys, like poultry of all other kinds, are subject to the other diseases and ailments which affect fowls, most of which may be prevented or avoided if proper care and attention are given to the sanitary conditions and to the proper feeding of the stock.

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CEREAL INVESTIGATIONS.